Status of Gypsy Moth Populations at Thirteen (13) Army Corps of Engineers Projects in the Pittsburgh District, 1989.

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ABSTRACT

In the spring of 1989, several forested-recreation areas at Conemaugh River Lake, Crooked Creek Lake and Youghiogheny River Lake were treated with a single application of B.t. (Bacillius thuringiensis) to suppress gypsy moth populations. All treatment areas received adequate foliage protection, but gypsy moth populations in the treatment area around the dam at Conemaugh River Lake increased by 320 percent over pre-treatment levels. Gypsy moth populations are sufficient to cause heavy defoliation in areas of Conemaugh River Lake, Crooked Creek Lake, Loyalhanna Lake, Mahoning Creek Lake, and Youghiogheny River Lake in 1990. Direct treatment of these sites with a single application of diflubenzuron or two applications of B.t. is recommended. Light to moderate defoliation is possible at Tionesta Lake and East Branch Lake, but populations appear to be collapsing naturally throughout that area. No treatment is recommended. Gypsy moth populations at Stonewall Jackson Lake, M.J. Kirwan Reservoir, Shenango River Lake, Tygart Lake, Union City Reservoir, and Woodcock Creek Lake are not sufficient to cause any noticeable defoliation in 1990.

INTRODUCTION

Between August 12 and October 11, 1989, USDA Forest Service and/or US Army Corps of Engineers personnel conducted egg mass surveys at the following 13 Pittsburgh District Army Corps of Engineers projects: Conemaugh River Lake; Crooked Creek Lake; Loyalhanna Lake; Mahoning Creek Lake; Youghiogheny River Lake; Tionesta Lake; East Branch Lake; Stonewall Jackson Lake; M.J. Kirwan Dam; Shenango River Lake; Tygart Lake; Union City Reservoir; and Woodcock Creek Lake. The purpose of the surveys was to: 1) determine the current status of gypsy moth populations; 2) determine the need for treatment in 1990; and 3) determine treatment effectiveness of the 1989 suppression program.

METHODS

Gypsy moth survey plots were randomly selected based on available host trees (oaks), size of sample areas, uniformity between egg mass counts, areas of concern to resource managers and available time. At each sample point, either a 1/40th acre fixed-radius plot or a 5-minute walk was conducted.

The fixed radius plots (radius 18.6 feet) consisted of circular plots in which all newly laid (1989) egg masses observed on the overstory trees, understory vegetation, ground litter and duff were tallied. The number of egg masses per acre was determined using the following equation:

$$Y = 40X$$

where,

Y = egg masses per acre

X = number of egg masses observed in the plot

The 5-minute walk method consisted of 2 observers casually walking in the same direction from the same starting point within the survey area for a period of 5 minutes. The number of new egg masses observed by the observers was then averaged and the number of egg masses per acre (EM/A) determined by applying the formula:

$$Y = 20.56X + 14.58^{1/}$$

where,

Y = egg masses per acre

X = average number of egg masses observed during the 5-minute walk

RESULTS

Egg mass surveys were conducted by USDA Forest Service personnel at sites where the Corps proposed treatment areas in 1990 based upon their preliminary surveys. These sites included the Conemaugh River Lake, Crooked Creek Lake, Loyalhanna Lake, Mahoning Creek Lake, and Youghiogheny River Lake. The data from the remaining Corps projects was provided by Corps personnel.

Conemaugh River Lake

Appendix Table 1 summarizes the egg mass survey data and Figures 1 and 2 show the proposed treatment areas and survey plot locations. A total of 12 survey plots was established at Conemaugh River Lake. Four plots (#1-4) were located in the dam area and averaged 1875 EM/A and ranged from 76-3777 EM/A. Four plots (#5-8) were located in the Aultmans Run area and averaged 5658 EM/A and ranged from 3551-7437 EM/A. Four plots (#9-12) were located in the vicinity of Grafton and averaged 3402 EM/A and ranged from 775-7786 EM/A. The three proposed treatment areas consist of approximately 146 acres.

The treatment area near the dam was treated in 1989 and is proposed for treatment again this spring. Egg mass densities have increased from 446 EM/A last spring to 1875 EM/A currently. This represents a population rise of 320 percent.

1/ Eggen, D.A. and L.P. Abrahamson, 1983. Estimating gypsy moth egg mass densities. State Univ. of NY, Coll. of Env. Sci. and Forestry, School of Forestry. Misc. Publ. No. 1 (ESF 80-002). 30p.

Youghiogheny River Lake

Gypsy moth populations are high enough to cause severe defoliation (61-100 percent) in the Tub Run, Somerfield North, Jockey Hollow Picnic, and Braddock Run areas. The most effective alternative to implement in these areas is:

Alternative 2 or Alternative 4

Moderate defoliation (31-60 percent) may occur at Klondike Ridge and Jockey Hollow Launch Area. A single application of B.t. (Alternative 3) might be effective in these areas.

Tionesta Lake

Gypsy moth populations are high enough to cause light to moderate defoliation (1-60 percent). However, populations appear to be on a downward trend. If defoliation cannot be tolerated, then a single application of B.t. (Alternative 3) would most likely provide foliage protection and population reduction. Otherwise, implement Alternative 1.

Other Projects

Gypsy moth populations are not likely to cause noticeable defoliation at East Branch Lake, Stonewall Jackson Lake, M.J. Kirwan Dam, Shenango River Lake, Tygart Lake, Union City Reservoir or Woodcock Creek Lake. No action (Alternative 1) is appropriate at this time.

In the past the Pittsburgh District has coordinated treatments with the Pennsylvania Department of Environmental Resources. We recommend that this avenue be pursued again in 1990. The person you will need to contact is Mr Larry Rhodes (717-948-3941). He is with the Division of Forest Pest Management in Middletown, PA.

Table 6. -- Gypsy Moth Egg Mass Survey Results at Tionesta Lake, September 6, 1989.

Plot #	# Egg Masses/Acre
1	160
2	240
3	0
4	200
5	480
6	200
7	160
8	1200
9	200
10	520
11	720
12	120

Range = 0-1200 Egg Masses/Acre
Average = 350 Egg Masses/Acre

Table 7. -- Gypsy Moth Egg Mass Survey Results at East Branch Lake, September 2, 1989.

Plot #	# Egg Masses/Acre
1	35
2	97
3	76
4	97

Range = 35-97 Egg Masses/Acre
Average = 76 Egg Masses/Acre